NVIDIA GeForce™ 8000 series

User's Manual

Version 14.00

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Introduction

The GeForce® 8000 series graphics processing units (GPUs). Offering unprecedented processing power and unparalleled levels of graphics realism and special effects, the only other “un” that comes to mind is “unbelievable”!

Based on the revolutionary new NVIDIA® GeForce® 8 graphics architecture, the GeForce® 8000 series GPUs are the industry’s first DirectX® 10 compatible GPUs and are the reference GPUs for the DirectX® 10 development and certification.

A fully unified shader core that dynamically allocates processing power to geometry, vertex, physics, or pixel shading operations and unified stream processors that efficiently process geometry shader programs, while reducing dependence on the CPU for geometry processing, the GeForce® 8000 series feature NVIDIA® GigaThread™ technology that supports thousands of independent simultaneous threads for maximum GPU utilization. Shader Model(SM) 4.0 enables more complex operations on the GPU and reduces the load and CPU cycles.

Stream Out enables programmers to add more detail without having to re-render the entire pipeline and Geometry Shaders permit geometry creation and tessellation for smooth curved surfaces and more lifelike character animation, including more realistic facial expressions and hair.

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Features and Specifications

Video- PX8000/PX558/PX628/558PCI series

NVIDIA® unified architecture:

Fully unified shader core dynamically allocates processing power to geometry, vertex, physics, or pixel shading operations, delivering up to 2x the gaming performance of prior generation GPUs.

GigaThread™ Technology:

Massively multi-threaded architecture supports thousands of independent, simultaneous threads, providing extreme processing efficiency in advanced, next generation shader programs.

Full Microsoft® DirectX® 10 Support:

World's first DirectX 10 GPU with full Shader Model 4.0 support delivers unparalleled levels of graphics realism and film-quality effects.

NVIDIA® SLI™ Technology1:

Delivers up to 2x the performance of a single graphics card configuration for unequaled gaming experiences by allowing two graphics cards to run in parallel. The must-have feature for performance PCI Express® graphics, SLI dramatically scales performance on today's hottest games.

NVIDIA® Lumenex™ Engine:

Delivers stunning image quality and floating point accuracy with ultra-fast frame rates:

16X Anti-aliasing Technology:

Lightning fast, high-quality anti-aliasing at up to 16x sample rates obliterates jagged edges.

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128-bit Floating Point High Dynamic-Range (HDR) Lighting:

Twice the precision of prior generations for incredibly realistic lighting effects-now with support for anti-aliasing.

NVIDIA® Quantum Effects™ Technology:

Advanced shader processors architected for physics computation enable a new level of physics effects to be simulated and rendered on the GPU-all the while freeing the CPU to run the game engine and AI.

NVIDIA® ForceWare® Unified Driver Architecture (UDA):

Delivers a proven record of compatibility, reliability, and stability with the widest range of games and applications. ForceWare provides the best out-of-box experience for every user and delivers continuous performance and feature updates over the life of NVIDIA GeForce® GPUs.

OpenGL® 2.0 Optimizations and Support:

Ensures top-notch compatibility and performance for OpenGL applications.

NVIDIA® nView® Multi-Display Technology:

Advanced technology provides the ultimate in viewing flexibility and control for multiple monitors.

PCI Express Support:

Designed to run perfectly with the PCI Express bus architecture, which doubles the bandwidth of AGP 8X to deliver over 4 GB/sec. in both upstream and downstream data transfers.

Dual 400MHz RAMDACs:

Blazing-fast RAMDACs support dual QXGA displays with ultra-high, ergonomic refresh rates-up to 2048x1536@85Hz.

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Dual-link DVI Support:

Able to drive the industry's largest and highest resolution flat-panel displays up to 2560x1600.

Built for Microsoft® Windows Vista™:

NVIDIA's fourth-generation GPU architecture built for Windows Vista gives users the best possible experience with the Windows Aero 3D graphical user interface, included in the upcoming operating system (OS) from Microsoft.

NVIDIA® PureVideo™ HD Technology2:

The combination of high-definition video decode acceleration and post-processing that delivers unprecedented picture clarity, smooth video, accurate color, and precise image scaling for movies and video.

Discrete, Programmable Video Processor:

NVIDIA PureVideo is a discrete programmable processing core in NVIDIA GPUs that provides superb picture quality and ultra-smooth movies with low CPU utilization and power.

Hardware Decode Acceleration:

Provides ultra-smooth playback of H.264, VC-1, WMV and MPEG-2 HD and SD movies.

Spatial-Temporal De-Interlacing:

Sharpens HD and standard definition interlaced content on progressive displays, delivering a crisp, clear picture that rivals high-end home-theater systems.

High-Quality Scaling:

Enlarges lower resolution movies and videos to HDTV resolutions, up to 1080i, while maintaining a clear, clean image. Also provides downscaling of videos, including high-definition, while preserving image detail.

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Inverse Telecine (3:2 & 2:2 Pulldown Correction):

Recovers original film images from films-converted-to-video, providing more accurate movie playback and superior picture quality.

Bad Edit Correction:

When videos are edited after they have been converted from 24 to 25 or 30 frames, the edits can disrupt the normal 3:2 or 2:2 pulldown cadence. PureVideo uses advanced processing techniques to detect poor edits, recover the original content, and display perfect picture detail frame after frame for smooth, natural looking video.

Noise Reduction:

Improves movie image quality by removing unwanted artifacts.

Edge Enhancement:

Sharpens movie images by providing higher contrast around lines and objects.

Operating Systems

- Built for Microsoft Windows 7, Vista
- Windows XP

Compatibility

- NVIDIA Unified Driver Architecture (UDA)
- Fully compliant with OpenGL including OpenGL 2.0
- Microsoft DirectX 9, 10
- WHQL-certified for Windows 7, Windows Vista, Windows XP
- Video-PX558 series video cards are PCI-E 2.0 compatible

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System Requirement

- Intel Pentium® P4 or compatible system with PCI Express Bus (x16) Extension Slot / PCI slot
- CD-ROM drive, Quad speed or faster
- Hard Drive with at least 200MB Free space
- MS Windows® Vista/XP operating system
- Video-558PCI-Quad requires at least 400Watt power supply with one 6-pin power connector
- Video-558PCI-QLP and Video-558PCI-QDLP requires at least 400Watt power supply with one 4-pin power connector
- Minimum 400 Watt power supply (Minimum recommended power supply with +12 Volt current rating of 20 Amp Amps.)
  Minimum 500 Watt for SLI mode system
  (Minimum recommended power supply with +12 Volt current rating of 28 Amp Amps.)

Check List

- Video-PX8400-series, Video-PX558-series, Video-PX628-series, Video-558PCI-series Multimedia Accelerator
- TV/HDTV out MD 9 pin converter cable for Composite, S-Video or Component - Video-PX8400GS-EX, Video-PX558-LP, Video-PX558-DLP, Video-558PCI-DLP
- Converter cable – converts MD-9pin to DB-15 VGA – Video-PX558-Twin, Video-PX628-Twin
- LFH 59 pin to Dual DVI adapter cable (part# CB59DVI-I2C00) – Video-PX558-DLP, Video-558PCI-DLP, Video-558PCI-Quad
- LFH 59 pin to Quad VGA adapter cable (part# CB59D0003) –Video-558PCI-QLP
- LFH 59 pin to Quad DVI adapter cable (part# CB59D0004) –Video-558PCI-QDLP
- LFH 59 pin to Dual VGA adapter cable (part# CB59D0001C00) – Video-PX558-LP
- DVI to RGB converter - Video-PX8400GS-EX, Video-PX8400GS-EHX, Video-PX8400GS-LHX, Video-PX8400GS-LH
- Software & Documents CD
- Quick Start Guide (Printed)

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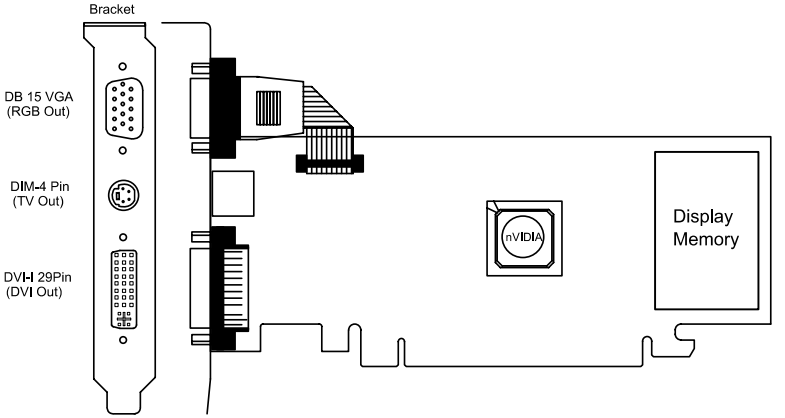
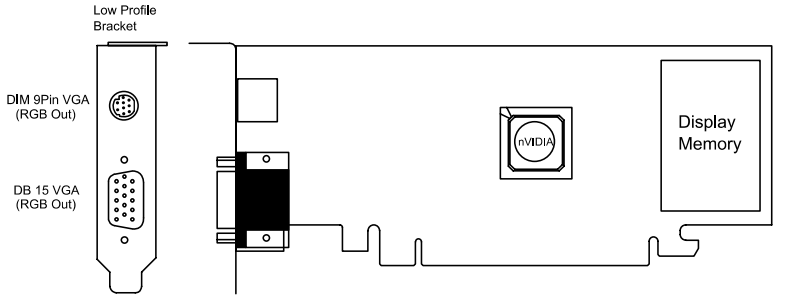
Hardware Description

Video-PX8400GS-EX



Video-PX558-TWIN / Video-PX628-Twin



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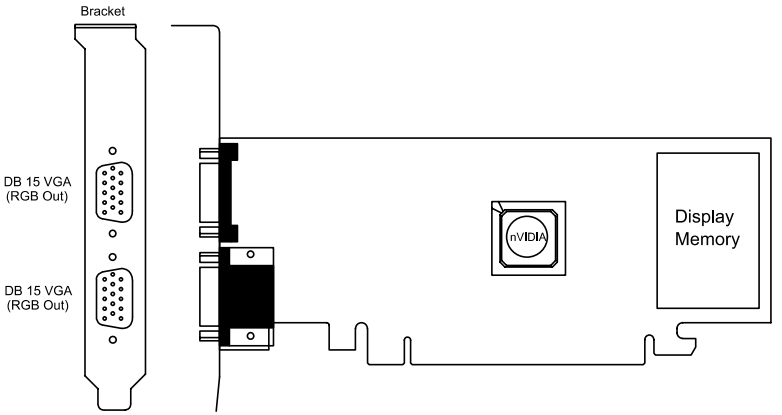
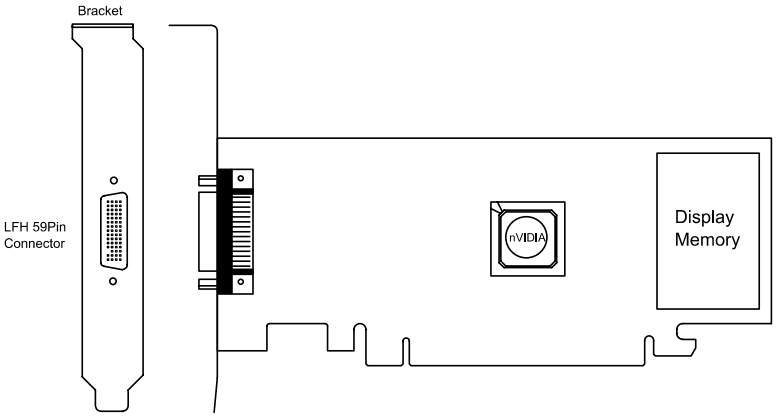
Video-PX558-DT / Video-PX628-DT



Video-PX558-DLP



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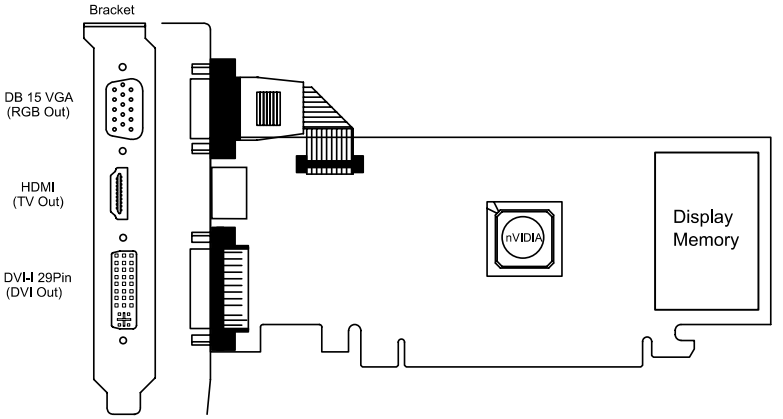
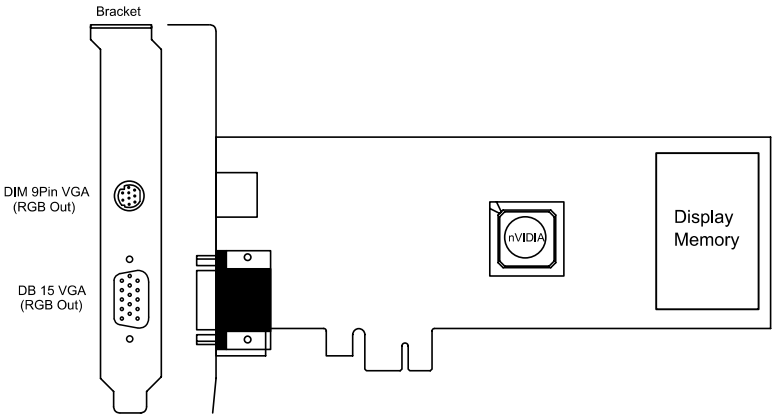
Video-PX8400GS-EHX / Video-PX8400GS-LHX / Video-PX8400GS-LH



Video-PX628GS-LP1



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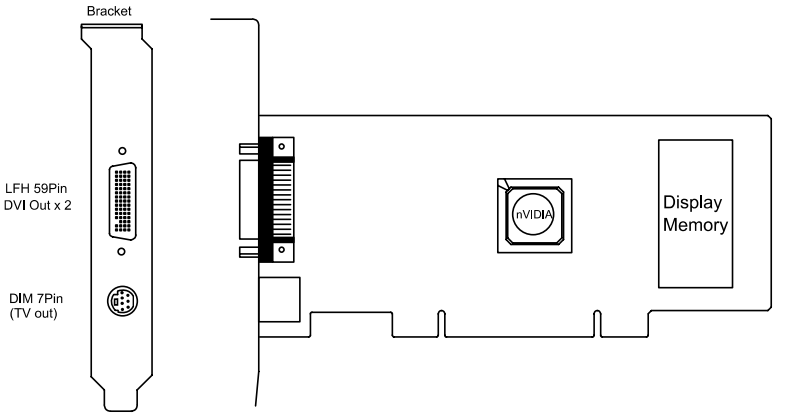
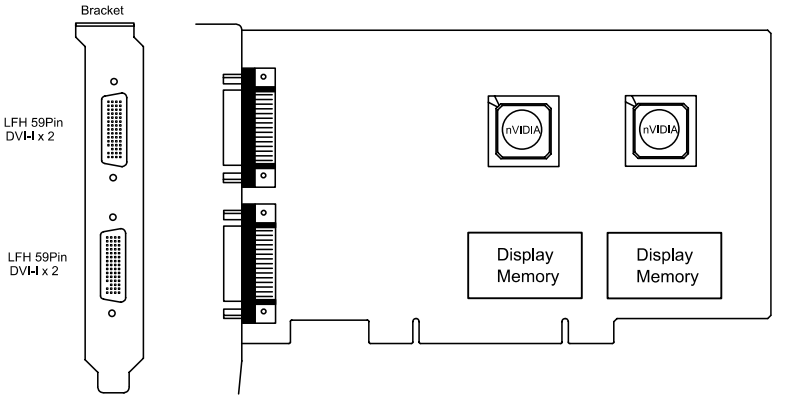
Video-558PCI-DLP



Video-558PCI-Quad



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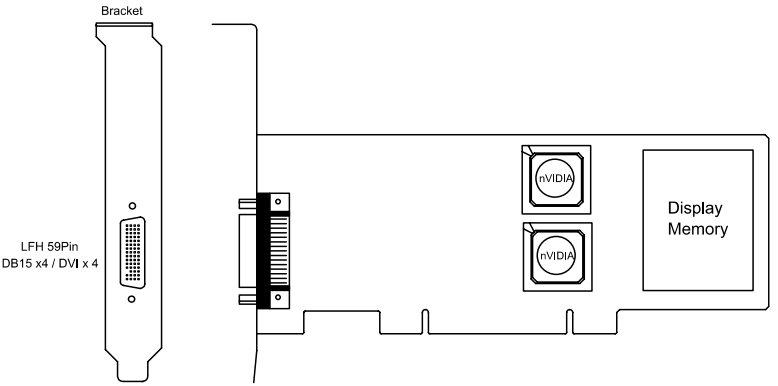
Video-558PCI-QLP / Video-558PCI-QDLP



Product name / PCB version	Core Chipset		PCB Size	Memory Size	
Video-PX8400GS-EX	82558A	NVIDIA GeForce 8400GS	W=6.600" X H=2.713"	64M X 16 DDR2	512MB
Video-PX8400GS-LH	82628C	NVIDIA GeForce 8400GS	W=5.700" X H=2.713"	64M X 16 DDR2	512MB
Video-PX8400GS-LHX	82668B	NVIDIA GeForce 8400GS	W=5.700" X H=2.713"	64M X 16 DDR3	512MB
Video-PX8400GS-EHX	82668B	NVIDIA GeForce 8400GS	W=5.700" X H=2.713"	64M X 16 DDR3	1GB
Video-PX628-TWIN	82628E	NVIDIA GeForce 8400GS	W=6.600" X H=2.78"	64M X 16 DDR2	512MB
Video-PX628-DT	82628E	NVIDIA GeForce 8400GS	W=6.600" X H=2.78"	64M X 16 DDR2	512MB
Video-PX628GS-LP1	82628H	NVIDIA GeForce 8400GS	W=6.600" X H=2.78"	64M X 16 DDR2	512MB
Video-PX558-TWIN	82558E	NVIDIA GeForce 8400GS	W=6.600" X H=2.78"	64M X 16 DDR2	512MB
Video-PX558-DT	82558E	NVIDIA GeForce 8400GS	W=6.600" X H=2.78"	64M X 16 DDR2	512MB
Video-PX558-DLP	82558F	NVIDIA GeForce 8400GS	W=6.600" X H=2.713"	64M X 16 DDR2	512MB
Video-558PCI-DLP	82558Q	NVIDIA GeForce 8400GS	W=6.600" X H=2.713"	64M X 16 DDR2	512MB
Video-558PCI-QUAD	82558S	NVIDIA GeForce 8400GS	W=9.000" X H=4.375"	64M X 16 DDR2	1GB *
Video-558PCI-QLP	82558T	NVIDIA GeForce 8400GS	W=7.500" X H=2.72"	64M X 16 DDR2	1GB *
Video-558PCI-QDLP	82558U	NVIDIA GeForce 8400GS	W=7.500" X H=2.72"	64M X 16 DDR2	1GB *

* 1GB is the total amount of memory onboard. The actual memory for each Graphics Processor Unit is 512MB.

Accessories for VGA cards are sold separately. Please go to http://Store.anvshopper.net for details

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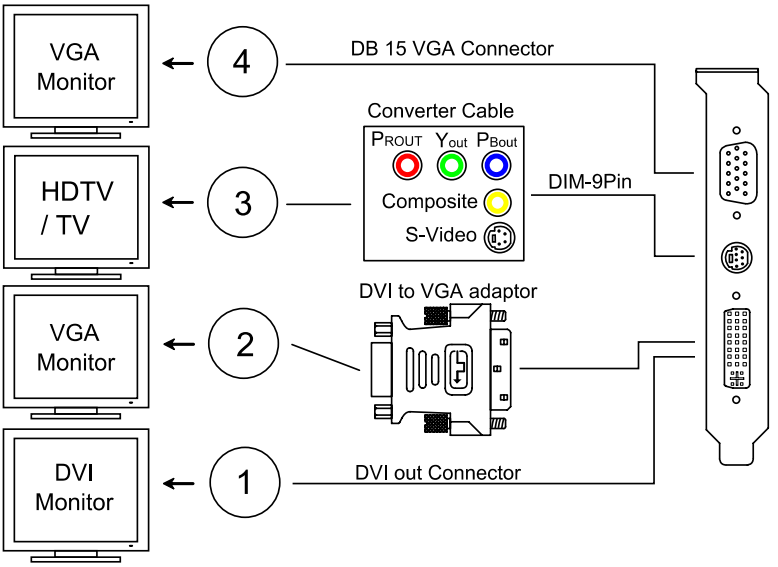
Display Devices Output

Video-PX8400GS-LX / Video-PX8400GS-EX



1. DVI out - DVI connects to LCD display panel.
2. DVI converts to RGB with DVI-RGB converter for VGA out.
3. TV-Out – MD-9 pin connector for Component, S-Video or Composite Out.
4. VGA out - connects to CRT monitor.

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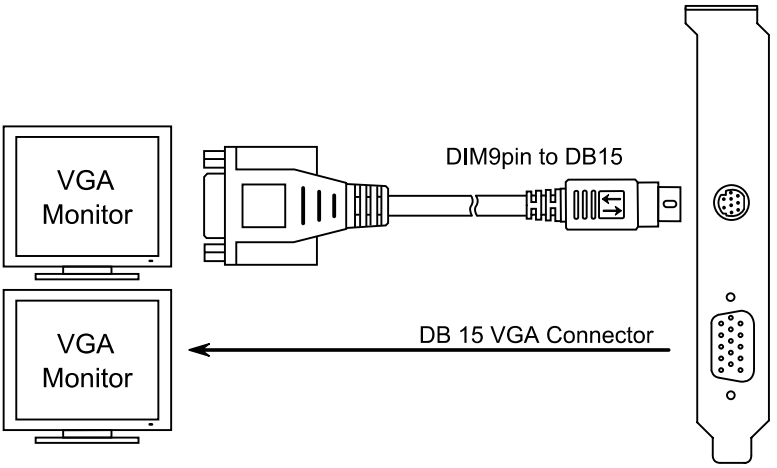
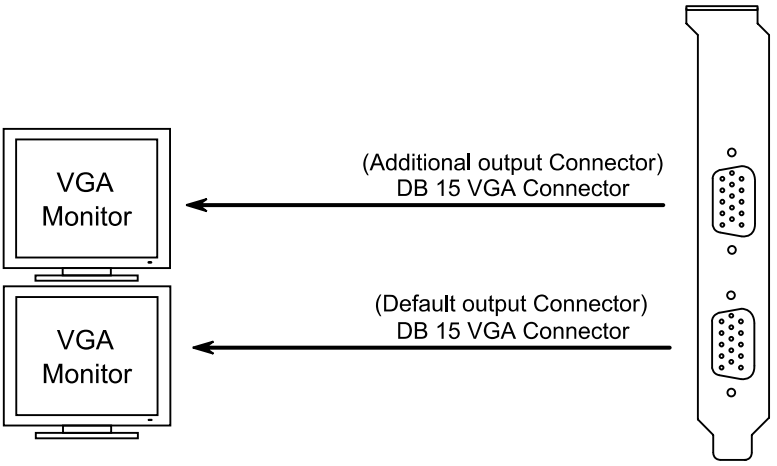
Video-PX558-TWIN / Video-PX628-TWIN / Video-PX628GS-LP1



1. VGA out - connects to CRT monitor.
2. MD-9 Pin converts to DB-15 VGA to CRT monitor.

Video-PX558-DT / Video-PX628-DT



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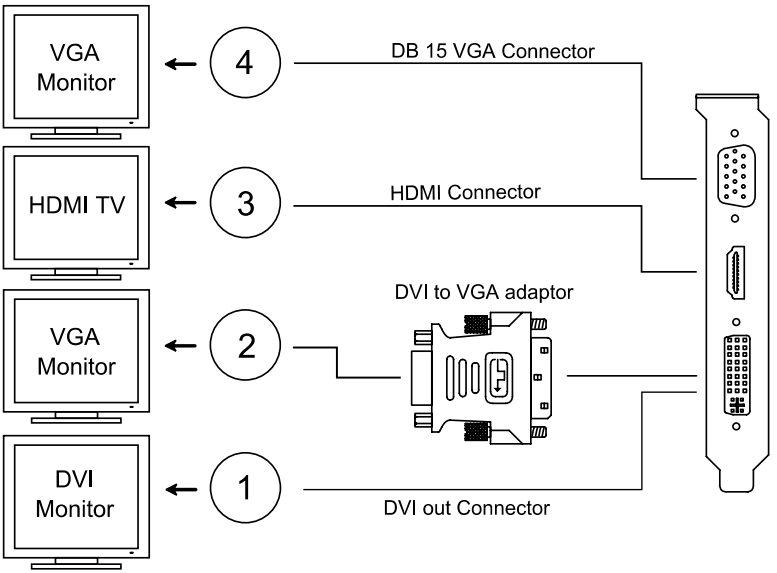
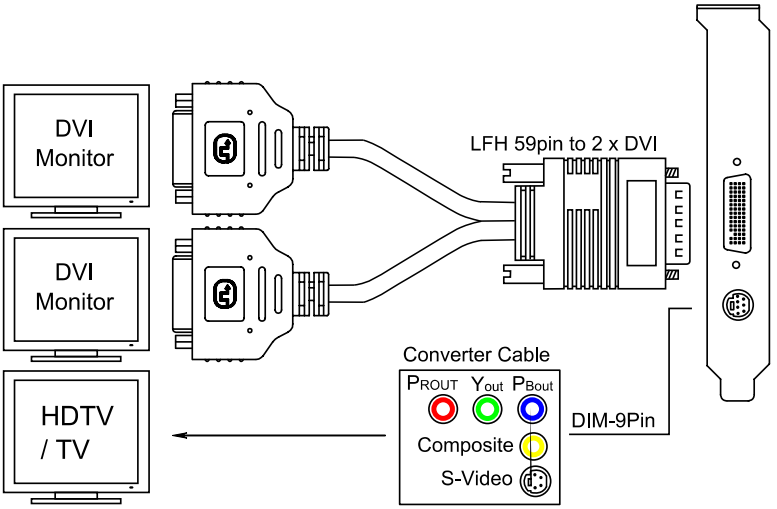
Video-PX8400GS-EHX / Video-PX8400GS-LHX / Video-PX8400GS-LH



Video-PX558-DLP / Video-558PCI-DLP



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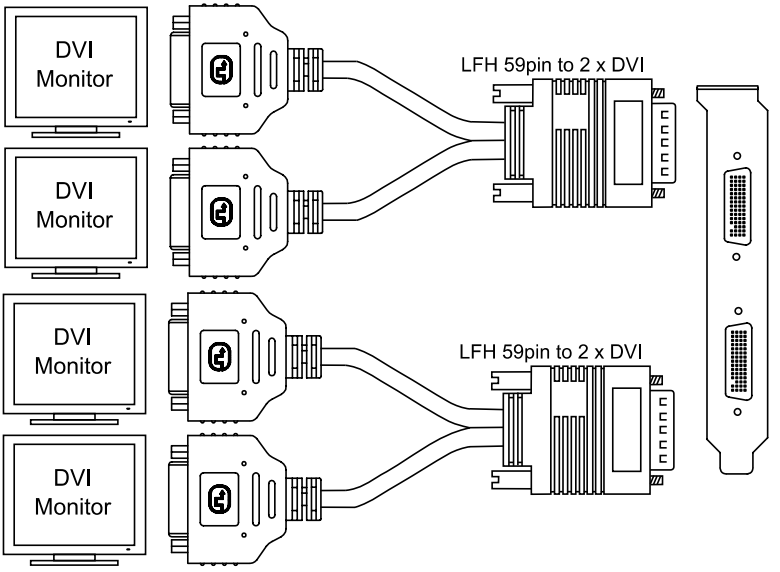
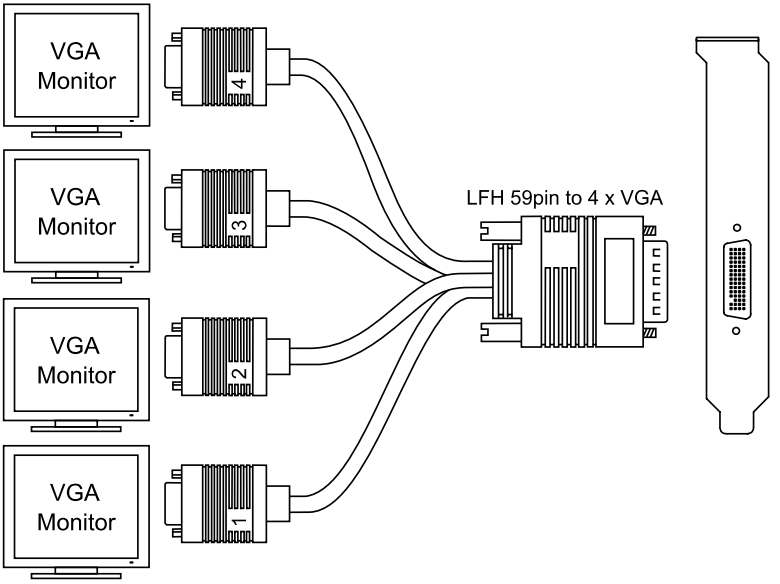
Video-558PCI-Quad



Video-558PCI-QLP



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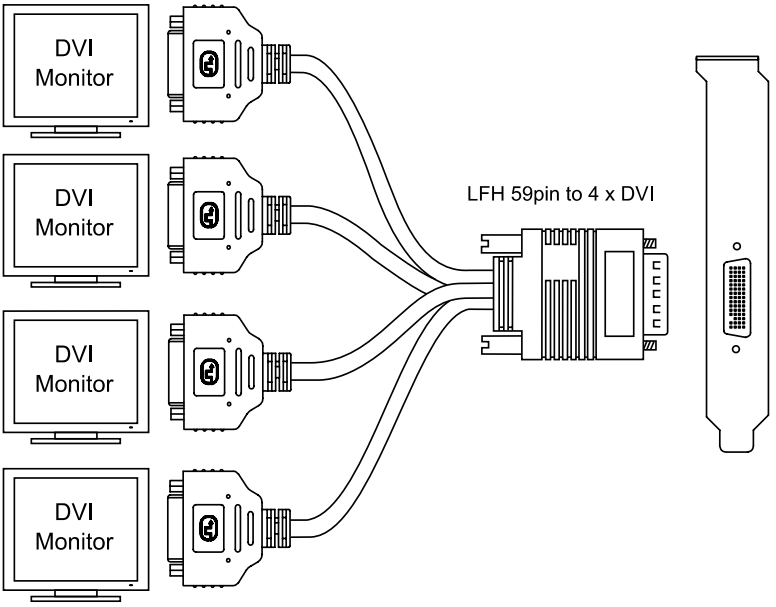
Video-558PCI-QDLP



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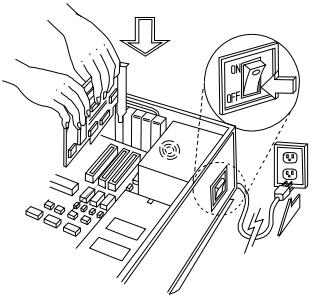
Hardware Installation

Installation Procedures



!! WARNING!!

Discharge static electricity by touching the **GROUND** such as metal part of your case connected with good power ground before you handle the electronic circuit boards.

The manufacturer assumes no liability for any damage, caused directly or indirectly, by improper installation of any components by unauthorized service personnel. If you do not feel comfortable performing the installation, consult with a qualified computer technician.

Steps:

1. Turn OFF all powers to your system, including any peripherals (printer, external drives, modem, etc.).
2. Disconnect the power cord and the monitor cable from the back of the computer.
3. Unfasten the cover mounting screws on your system and remove the system cover. Refer to your system user manual for instructions to determine the location of the mounting screws.
4. Remove the retaining screw that holds the slot cover in place. Slide the slot cover out and put the screw aside (you will need it to secure the adapter).
5. To install the adapter in PCI-E expansion slot, carefully line up the gold-fingered edge connector on the adapter directly above the expansion slot connector on the motherboard. Then press the adapter into place, completely. Use the (remaining) screw you removed to secure the adapter-retaining bracket in place.
6. Replace the computer cover. Secure the cover with the mounting screws you removed in Step 3.

You have now completed the installation of your new graphics adapter on your system.

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Upgrade Steps:

Add or change your video adapter to an existing system, you may precede a few steps before you install the new hardware and software (video display driver). The followings are some of the considerations:

1. To add a new adapter, ensure the mainboard has available IRQ for new devices, and there is no conflict between each other.
2. If you try adding this video adapter to an ALL-IN-ONE mainboard (which video port built-in already), then you have to disable that port first. Otherwise, that will be a problem for the new video adapter setup.
3. The driver installation for system upgrade is the same as below, if error occurs when you proceed to step 1, 2 or 3, please consult with your system dealer or the existing hardware manufacturer support.

* For Video-558PCI-Quad - one 6-pin power connector from power supply must be connected to the video card power connector to provide power to video card

* For Video-558PCI-QLP - one 4-pin power connector from power supply must be connected to the video card power connector to provide power to video card

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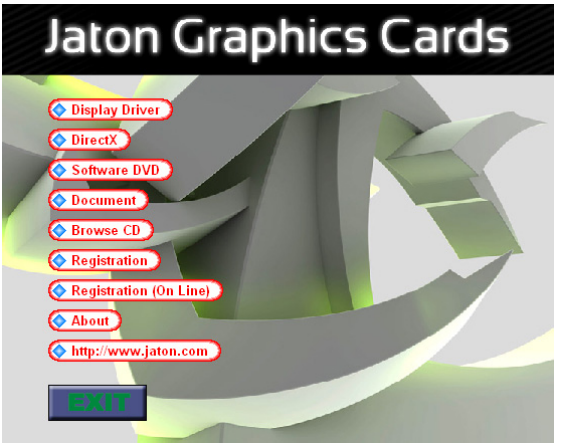
Software Installation

Windows® 7, Vista and XP Driver Installation

InstallShield® Program:

Microsoft Windows® 7, Vista and XP detects this new hardware and places appropriate display driver from its system folder automatically - it doesn't matter if you have added a new driver or changed the existing one. To maximize the video board acceleration and increase its performance, you may install the manufacturer's display driver as follows:

1. Click on Display Driver to install video card driver.



2. Click on "Agree and Continue" to continue the process.

NVIDIA Install
NVIDIA Graphics Driver
NVIDIA
System Check
License Agreement
Options
Install
Finish
NVIDIA software license agreement
Please read the following NVIDIA software license agreement carefully.
License For Customer Use of NVIDIA Software
IMPORTANT NOTICE -- READ CAREFULLY: This License For Customer Use of NVIDIA Software ("LICENSE") is the agreement which governs use of the software of NVIDIA Corporation and its subsidiaries ("NVIDIA") downloadable herefrom, including computer software and associated printed materials ("SOFTWARE"). By downloading, installing, copying, or otherwise using the SOFTWARE, you agree to be bound by the terms of this LICENSE. If you do not agree to the terms of this LICENSE, do not download the SOFTWARE.
Click agree and continue if you accept the terms of the agreement.
AGREE AND CONTINUE
CANCEL

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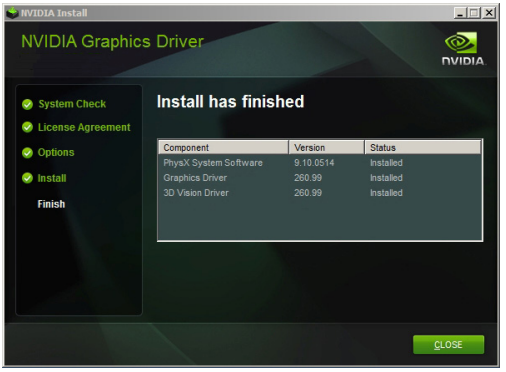
3. Select Express or Customer and Click “NEXT” to continue.

4. For Custom installation, Select the components to install and Click “NEXT” to continue.

5. Once installations has finished, Click “CLOSE” to finish.



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Technical Assistance

Q: Why is the display shifted or changed sizes when I switch display modes?

Explain and Suggestion:

Some monitors lack auto-sizing features or just do not synchronize properly to the video board output. In some cases, horizontal and vertical display adjustments may be necessary. Use the monitor control panel functions to adjust screen.

In other cases, mode type and refresh rate adjustments may be necessary. Use the utility program, which provided by video card manufacturer or production developer. To center the display with normal type (mode 3), and to reduce (decrease) the refresh rate with the monitor's specification.

Q: What kind monitors can display 800x600 modes or higher resolution mode?

Explain and Suggestion:

To display 800x600 resolution at 60Hz refresh rate, the monitor must be capable of synchronizing a 31.5KHz horizontal scan rate (e.g., NEC 2A, 3D). At 72Hz refresh rate, the monitor must be capable of synchronizing a 48.0KHz scan rate (e.g., Sony HG 1304, NEC 4D, 5D, Seiko 1450).

To display 1024x768 interlaced mode; the monitor must be capable of synchronizing a 35.5KHz horizontal scan rate (e.g., NEC 3D, Seiko 1430 or 1440). To display 1024x768 non-interlaced mode at 60Hz, the monitor must be capable of synchronizing a 48.7KHz scan rate (e.g., Sony HG 1304, NEC 4D, 5D, Seiko 1450).

To display 1024x768 non-interlaced mode at 70Hz, the monitor must be capable of synchronizing a 56.4KHz scan rate (e.g., NEC 4D).

Q: System hangs-up after installing video driver.

Explain and Suggestion:

Today, most video drivers are developed for 32-bit processing and may require a channel to Code/Decode. Conflict between device drivers and TSR (terminate-and-stay-resident) programs will inverted the display, and are particularly effectual at crashing computer. The most effective way to check for conflicts is to replace with the original video driver, or delete and re-install the current video driver to the system.

Accomplishing IRQs (Interrupt Request Query) settings or troubleshooting the conflicts on hardware source may necessary. Most AGP video cards designed for Plug-n-Play, that means video card IRQ's setup which controls by main board's (motherboard) circuitry and BIOS. Physically pulling out other devices from system, and re-starts the computer. Confirm and modify your IRQ addresses with qualified computer technician.

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Q: Multiple images or unreadable screen after loading video driver.

Explain and Suggestion:

There are a variety of reasons why the display might be distorted. One common reason is a monitor mis-match. Some older multi-frequency monitors are unable to switch video modes without being turned off, then turned on again.

If the problem occurring in windows, make sure that you have loaded that proper video driver, and that the driver is compatible with the monitor being used. Try re-configuring your application software to use a compatible video mode. If problem persist in windows, load the standard generic VGA driver. The generic VGA driver should function properly with virtually every video board and VGA (or SVGA) monitor available.

If that is an unsatisfactory solution, you may have to upgrade to a monitor that supports the desired video mode.

Some new monitors are also synchronizing this problem because built-in DDC (Data-Digital-Channel) feature. Sometime that DDC automatically setup the display frequency without loading video driver. Try to turn it off, or change settings of monitor type in your system.

Q: Selection of color, resolution and refresh rate combination that always backs to default after restart the system.

Explain and Suggestion:

Accordingly, there must be a bug (defected source-code) in video driver, or in the system. Debug the source-code or fix the error in video driver that should be done by the driver developer. Likewise, upgrade the video driver from the manufacturer or from the original software developer is necessary.

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Technical Support

In the event you have a technical problem with this product, please read the README files in the software CD_ROM. Updated drivers are available through Jaton Web site. Have following information handy when you contact technical support:

- ☑ Name of the product.
- ☑ Software Driver and Version.
- ☑ System Information, such as CPU speed, BIOS version, Monitor Specification, etc.
- ☑ Description of the problems including any error messages.

Telephone:	(510) 933-8886 (Mon. - Fri. 9am-5pm PST)
FAX:	(510) 933-8887
email:	vgasupport@jaton.com
Website:	www.jaton.com

How to Obtain Warranty Service

In the worldwide contact:

www.jaton.com

In United States contact:

Jaton Corporation.

Service Center

47677 Lakeview Blvd.,

Fremont, CA 94538

Tel: 510-933-8886

Fax: 510-933-8887

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In Taiwan contact:

Jaton Technology Co., Ltd.

10F, NO.194, SEC.3, TA TUNG RD., HIS-CHIH,

TAIPEI, TAIWAN R.O.C.

Tel : 886-2-8647-1899

Fax : 886-2-8647-2679

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This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation,

"SHIELD INTERFERENCE CABLE (S) MUST BE USED ACCORDING TO FCC 15.27©."

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Manufacturer warrants that all PC Products sold in United States are free from defects in material and workmanship for a period of *one year from manufacturing date or from date of purchase.*

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This Limited Warranty does not cover any incompatibilities due to the user's computer, hardware, software or any related system configuration in which the Jaton Products interfaces. Manufacturer does not guarantee the compatibility of the video cards with any hardware components, systems or software that's available in the market. If a product is deemed incompatible by Manufacturer tech support, the product in question is therefore not defective and thus no warranty will be provided. It is the buyer's sole responsibility to do their own research and determine if the products to be purchased are compatible to the hardware components, systems or software they intend to use with. Proof of purchase will be required before any consideration by Manufacturer occurs. If you find any damage or missing items, please contact your dealer (point-of-purchase) as soon as possible.

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Other Statements

Manufacturer's employees or representatives' **ORAL OR OTHER WRITTEN STATEMENTS DO NOT CONSTITUTE WARRANTIES**, shall not be relied upon by Buyer, and is not a part of the contract for sale or this Limited Warranty.

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Terms and Conditions

Direct Jaton Customer:	This warranty applies only for a period of two (2) years from purchase date of Jaton original invoice.
Reseller/ Vendor:	This warranty applies only for a period of two (2) years from manufacturing date.
Registered User:	This warranty applies only for a period of two (2) years from purchase date and MUST register within 60 days of purchase date from legal reseller. If Failure to register within 60 days from date of purchase then the warranty is one (1) year from the purchase date.
Others:	If the products do not conform to this Limited Warranty (as herein above described), Manufacturer should charge services such as repair, replacement whether based on its costs. Shipping and installation of the replacement Products or replacement parts shall be at User's expanse.

Services agreement:

(1) All applicants shall complete service request form from Manufacturer.

(2) All returned checks will be charged a $20.00 fee by Manufacturer.

(3) All repair and replacement services allow 4-6 weeks from the date of receiving by Manufacturer.

(4) All products without warranties require service processing fee $20 (payment in advance), which is not refundable.

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Entire Obligation

This Limited Warranty states the entire obligation of Manufacturer with respect to the Products. If any part of this Limited Warranty is determined to be void or illegal, the remainder shall remain in force and effect. Some states do not allow limitation of implied warranties, or exclusive or limitation on product incidental or consequential damages, so above limitation may not apply to you. This warranty gives you specific legal rights. You may have other rights, which may vary from state to state.

This warranty applies only to this product, and is governed by the law of the State of California.

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Reducing Warranty Claim Rejections

To reduce the potential of incurring damages not covered by Manufacturers warranties, we strongly recommend the following:

- Read your manuals before installing peripherals and/or before making changes to the machine's configuration;
- Ask your dealer if there are any known problems with the system requirements or installation procedures for any add-on products that your are purchasing;
- Buy industry standard products where compatibility issue are less likely to surface;
- If you are unsure about installation for a new product, contact your dealer's service department.

We believe it is important for you to know and understand what your warranty coverage provides and what it does not.

We also want you to be aware that most hardware warranties only relate to the function of the hardware. In most cases, no assurances are given by the manufacturer that the hardware item will work in conjunction with any other hardware item. If a computer product is not working because it is not compatible with another product, or because it has not been properly installed and set-up, the manufacturer does not pay for the service time. To help avoid these inconveniences, contact a professional consultant that one can help you determine the possibility of incompatibility issue before you purchase add-on or accessories.

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Warranty Service Use Only

Product Label / Serial Number Sticker / Manufacture Date code

Part Number: Video-PX558-Twin
Serial Number : A097XZ0028S
09 – Manufactured in 2009
7 – Manufactured in July

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